

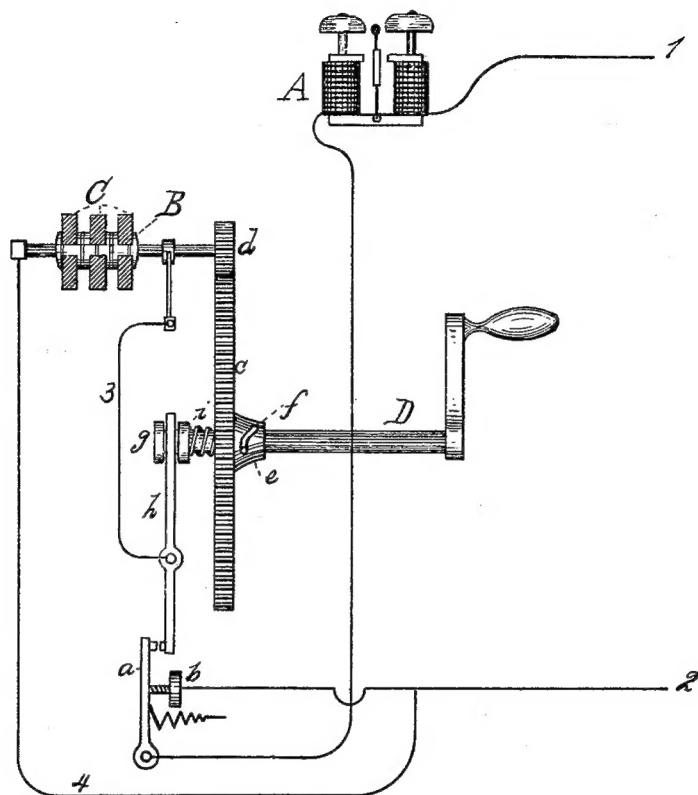
(No Model.)

T. A. EDISON.

MAGNETO ELECTRIC SIGNALING APPARATUS.

No. 273,714.

Patented Mar. 13, 1883.



WITNESSES:

E. C. Rowland,  
W. W. Seely.

INVENTOR:

Thomas A. Edison,  
By Rich<sup>d</sup>. N. Dyer.  
Atty-

# UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY.

## MAGNETO-ELECTRIC SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 273,714, dated March 13, 1883.

Application filed August 7, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented a new and useful Improvement in Magneto-Electric Signaling Apparatus, (Case No. 469,) of which the following is a specification.

Heretofore in magneto-electric signaling apparatus it has been usual to provide means for normally closing a short or shunt circuit around the dynamo or magneto electric machine, and for automatically breaking such shunt-circuit immediately upon and continuously during the operation of the machine, the generator-circuit being kept permanently closed, as described in my application filed September 19, 1881, the purpose being to cut out of circuit the resistance of the generator when not in use by providing a circuit of practically no resistance around it, and to throw the generator into circuit when in use by breaking this shunt-circuit, the whole being done automatically by utilizing the mechanical movement necessary to work the generator.

The object of the present invention is to provide simple and efficient means for automatically throwing the generator into and out of circuit, not dependent upon the making and breaking of a shunt-circuit while the generator-circuit is kept closed. This is accomplished by providing means for automatically closing the main line and opening the generator-circuit when the generator is not in use, and for automatically opening the main line and closing the generator-circuit when the generator is in use.

In carrying out the invention the movement of the crank or wheel in working the generator is utilized to move a lever in one direction, such lever being moved in the other direction by a spring. This lever, when moved by the working of the generator, makes contact with a spring-lever, and separates the same from a contact-point. The main line passes through the latter lever and its contact-point, and hence their separation opens the main line. The first lever is connected with one end of the generator-circuit, while its other end is connected with the main line at or beyond the contact-point of the second lever. When the first lever pushes the second lever from its contact-

point the generator-circuit is completed by the contact of the levers, and the generator will throw electric impulses upon the main line, the two levers forming a switch which is worked by the movement required to operate the generator.

In utilizing the movement of the crank-shaft a sleeve may be moved longitudinally on the shaft by the force of turning the crank; but I prefer to move the shaft itself, it being connected with the cog or belt wheel, through which it passes loosely by a pin working in an oblique or triangular slot in the hub of such wheel. The shaft is provided with a grooved collar to work the lever, and is moved longitudinally in one direction by a spring.

The foregoing will be better understood from the accompanying drawing, which illustrates, partly diagrammatically, apparatus embodying the invention.

1 2 represent the main line passing through the coils of the bell-magnet A, and through the spring-lever *a* and contact-point *b*, the conductor 1 being connected with the lever *a*, while the conductor 2 is connected with the contact-point *b*.

B is the revolving armature of a dynamo or magneto electric machine, the field-magnets C of which are shown in horizontal section. The armature is revolved by crank-shaft D through cog-wheels *c d*, or two grooved wheels connected by an endless belt. The shaft D passes loosely through the hub of wheel *c*, and is connected therewith by a pin, *e*, entering an oblique slot, *f*, in the hub of said wheel. Shaft D has a grooved collar, *g*, at its inner end, which receives the end of a pivoted lever, *h*. A spiral spring, *i*, moves the shaft D in one direction longitudinally, while it is moved in the opposite direction by the traveling of the pin *e* in the oblique slot *f*. The generator-circuit 3 4 is connected with the lever *h* and with the contact-point *b* or the conductor 2 beyond said contact-point. Normally when the generator is not in use the main line will be closed at *b*, and the generator-circuit will be open, levers *a* and *h* not being in contact. When the crank-shaft D is turned the shaft will move longitudinally, and lever *h* will strike lever *a*, forcing it from contact *b* and keeping it separated therefrom until the movement is stopped,

when it will make contact again with *b*. This movement of lever *h*, forcing *a* from *b*, completes the generator-circuit at the same time that it opens the main line.

5 What I claim is—

1. In magneto-electric signaling apparatus, the combination, with a dynamo or magneto electric machine, of means for automatically opening the main line and closing the generator-circuit when the generator is in use, and for automatically closing the main line and opening the generator-circuit when the generator is not in use, substantially as set forth.

2. In magneto-electric signaling apparatus, the combination, with a dynamo or magneto electric machine, of a switch operated automatically by the movement required to work the generator, and the main line and generator circuits made and broken alternately by the switch, one circuit being open when the other is closed, substantially as set forth.

3. In magneto-electric signaling apparatus,

the combination, with a dynamo or magneto electric machine, of the lever *a* and contact *b*, connected with the main line 1 2, the lever *h*, 25 worked by the movement required to operate the generator, and the generator-circuit 3 4, connected with *h* and with 2, the main line being normally closed at *b*, and the generator-circuit being normally open by the separation 30 of *a* and *h*, substantially as set forth.

4. In magneto-electric signaling apparatus, the combination, with the dynamo or magneto electric machine, of a longitudinally-moving driving-shaft, and means operated by the move- 35 ment for throwing the generator into and out of circuit, substantially as set forth.

This specification signed and witnessed this 5th day of August, 1882.

THOS. A. EDISON.

Witnesses:

H. W. SEELY,  
EDWARD H. PYATT.